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10/500,902	05/19/2006	David S. McGrath	LAKE038	8847
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DOV ROSENFELD 5507 COLLEGE AVE SUITE 2 OAKLAND, CA 94618			SONG, DAEHO D	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/500,902	Applicant(s) MCGRATH ET AL.	
	Examiner DAEHO D. SONG	Art Unit 2176	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/30/08</u> . | 6) <input type="checkbox"/> Other: _____ |

Applicant's Response

In Applicant's Response dated 10/21/2008, Applicant amended Claims 1-15, 22-26, 28-31 and 33-39, canceled 16-21, 27 and 32, added 40-45, and argued against all rejections previously set forth in the Office Action dated 07/18/2008.

In light of Applicant's amendments and remarks, the rejections of Claims 33 and 38 under 35 U.S.C. 101 are withdrawn.

In light of Applicant's amendments and remarks, the rejections of Claims 7, 8 and 39 under 35 U.S.C. 112 are withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weiss: U.S. Patent No. 7,346,654 and in view of Curry et al. (hereinafter Curry): U.S. Patent Application Pub. No. 2003/0081115.

Claim 1.

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Weiss teaches:

An interactive spatialized audiovisual system for linking a plurality of remote user terminals, the system comprising:

a processing system coupled to a network (fig. 2);

an associated user database coupled to or part of the processing system, the user database including user data, including user status information for each corresponding user (figs. 2 and 6; col. 2 lines 30-55; col. 7 lines 8-25: including user status information, such as user's location, direction, listening status and talking status), wherein the processing system is configured to:

receive a plurality of audio streams and associated locating data from the remote user terminals each audio stream corresponding to a user as a source of audio, the locating data for virtually locating the users relative to one another within a virtual user environment (col. 2 lines 60-67; col. 3 lines 1-20; col. 7 lines 8-25: receiving audio signals and associated location information of the users in a virtual networked environment);

select at least one group of at least one of the plurality of audio streams based on status information in the user database, each group corresponding to one of the users (col. 4 lines 14-30: selection of a group of participant according to the user status information),

combine at least some of the plurality of audio streams to form a combined stream (col. 8 lines 3-26: mixing of the audio streams), and

send to each of at least one of the remote user terminals via the network the

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respective selected group of audio streams and associated locating data corresponding to the user of the remote user terminal (col. 8 lines 3-26: sending the selected audio streams and associated data to a remote user terminal) , and send to the at least one of the remote user terminals via the network a function of the combined stream; the function possibly user dependent (col. 8 lines 27-35: forwarding an audio packet of combined stream to remote users), wherein, a particular remote user terminal coupled to the network and corresponding to a particular user is configured to:

receive the sent group of audio streams and the function of the combined stream (col. 7 lines 8-25: receiving the sent group of streams and the function of the combined stream);

display a visual representation of the virtual user environment, including representations of at least some of the users (fig. 1; col. 4 lines 1-8: displaying avatars representing of the users); and

Weiss fails to expressly disclose:

convert the audio streams of the group corresponding to the particular user and the function of the combined stream to a pair of audio headphones signals including binauralized reverberant signals generated according to the combined stream.

Curry explicitly teaches:

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convert the audio streams of the group corresponding to the particular user and the function of the combined stream to a pair of audio headphones signals including binauralized reverberant signals generated according to the combined stream ([0035][0040]: converting the audio streams of a user to binaural and reverberant sound as a spatialized sound signal with a head-related transfer function).

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system, disclosed in Weiss, to include:
convert the audio streams of the group corresponding to the particular user and the function of the combined stream to a pair of audio headphones signals including binauralized reverberant signals generated according to the combined stream, for the purpose of providing a schematic of a spatial sound conference bridge used in a spatial sound conference system, as taught in Curry (see [0033]).

Weiss fails to expressly disclose:

the converting includes spatializing the audio streams of the group such that the particular user, listening to the headphone signals over headphones, has the sensation that the audio streams of the group are emanating from their respective user locations in the virtual user environment relative to the location of the particular user.

Curry explicitly teaches:

the converting includes spatializing the audio streams of the group such that the particular user, listening to the headphone signals over headphones, has the

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sensation that the audio streams of the group are emanating from their respective user locations in the virtual user environment relative to the location of the particular user
([0012][0013]: spatializing the audio streams of a user having the sense of other respective user's locations with a head-related transfer function).

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system, disclosed in Weiss, to include:
the converting includes spatializing the audio streams of the group such that the particular user, listening to the headphone signals over headphones, has the sensation that the audio streams of the group are emanating from their respective user locations in the virtual user environment relative to the location of the particular user, for the purpose of providing a schematic of a spatial sound conference bridge used in a spatial sound conference system, as taught in Curry (see [0033]).

Weiss fails to expressly disclose:

the spatializing includes HRTF processing to take into account the orientation and location of the particular user in the virtual user environment, and to take into account direct sounds and early echoes, and reverberation according to a non-spatial combination of audio streams.

Curry explicitly teaches:

the spatializing includes HRTF processing to take into account the orientation

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and location of the particular user in the virtual user environment, and to take into account direct sounds and early echoes, and reverberation according to a non-spatial combination of audio streams ([0013][0026][0040]: spatializing the audio streams of a user having the sense of other respective user's orientation with a head-tracking sensor as well as locations with a head-related transfer function, including direct, echo and reverberation sound).

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system, disclosed in Weiss, to include: *the spatializing includes HRTF processing to take into account the orientation and location of the particular user in the virtual user environment, and to take into account direct sounds and early echoes, and reverberation according to a non-spatial combination of audio streams, for the purpose of providing a schematic of a spatial sound conference bridge used in a spatial sound conference system, as taught in Curry (see [0033]).*

Claim 2.

Weiss fails to expressly disclose:

the processing system is further configured to carry out at least part of the converting of the audio streams of each group of audio streams.

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Curry explicitly teaches:

the processing system is further configured to carry out at least part of the converting of the audio streams of each group of audio streams ([0035]: processing of the converting of the audio streams of each group).

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system, disclosed in Weiss, to include:

the processing system is further configured to carry out at least part of the converting of the audio streams of each group of audio streams, for the purpose of providing a schematic of a spatial sound conference bridge used in a spatial sound conference system, as taught in Curry (see [0033]).

Claim 3.

Weiss fails to expressly disclose:

the processing system is further configured to spatialize a reverberantly processed version of the combined stream such that the particular user listening to the headphone signals over headphones perceives a reverberant background formed from the combined stream.

Curry explicitly teaches:

the processing system is further configured to spatialize a reverberantly processed version of the combined stream such that the particular user listening to the headphone

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signals over headphones perceives a reverberant background formed from the combined stream ([0035][0040]: reverberation sound from the combined stream).

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system, disclosed in Weiss, to include:

the processing system is further configured to spatialize a reverberantly processed version of the combined stream such that the particular user listening to the headphone signals over headphones perceives a reverberant background formed from the combined stream, for the purpose of providing a schematic of a spatial sound conference bridge used in a spatial sound conference system, as taught in Curry (see [0033]).

Weiss further teaches:

Claim 4. A system according to claim 1, wherein at least part of the spatializing occurs at the processing system such that the sending of a group of audio streams to the particular user is in at least a partially spatialized form (fig. 10A; col. 10 lines 35-55: sending of a group of audio streams, such as users A and B, to a particular user, such as user C, where only the user B becomes audible in a partially spatialized form).

Claim 5. A system according to claim 1, wherein the user status information used in the selecting the group to send to a particular user includes one or more of user location data which serves to locate the particular user in the virtual environment, user

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orientation data which serves to orientate the particular user both with respect to the other users and to the virtual environment, user listening status information for the particular user, and/or user talking status information for the particular user (col. 2 lines 30-42; col. 3 lines 10-20: the user status information including user's location, direction, listening status and talking status).

Claim 6. A system according to claim 5, wherein the user listening status information used in the selecting the group to send to a particular user is arranged to allow the particular user to listen to other selected users or groups of users in the environment (fig. 10A; col. 10 lines 35-55: allowing a particular user to listen to other users).

Claim 7. A system according to claim 5, wherein the selecting of a group of a particular number of one or more audio streams to send to a particular user includes selecting the closest particular number of other users within the virtual environment (fig. 10A; col. 10 lines 35-55: selecting the closest particular number of other users).

Claim 8. A system according to claim 5, wherein the selecting of a group of a particular number of one or more audio streams to send to a particular user includes selecting the loudest particular number of sources based on at least one of the the amplitude of the audio in the audio stream and/or the distance of the source of the

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audio stream from the particular user within the virtual environment (fig. 5; col. 6 lines 60-67: selecting the loudest particular number of sources based on the volume of sound).

Claim 9. A system according to claim 5, wherein the selecting of a group of a particular number of one or more audio streams to send to a particular user includes selecting according to input from the particular remote user terminal or from other remote user terminals (col. 2 lines 57-59: selecting avatars by the user to join or leave the conversation).

Claim 10. A system according to claim 5, wherein the selecting of a group of a particular number of one or more audio streams to send to a particular user includes selecting according to input from a moderator able to control the talking and listening status of the users (col. 6 lines 39-60: the meeting room inspector as “moderator” to control the talking and listening status).

Claim 11. A system according to claim 5, wherein the virtual environment has one or more geographical or topological features arranged to affect the listening capability of users in the virtual environment and wherein the selecting of a group of a particular number of one or more audio streams to send to a particular user includes

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selecting based on the geographical or topological features (col. 2 lines 30-55: providing a visual sense of presence and a spatial sense of presence according to location and direction of participant to affect the listening capability of users).

Claim 12. A system according to claim 11, wherein the one or more features include one or more barriers defining one or more chat rooms, wherein at least some of the audio streams in a particular room are summed and spatialized (fig. 11; col. 13 lines 40-60: generating the sum of sound intensity for the user's room with barriers) and

Weiss fails to expressly disclose:

reverberation processing is performed to achieve a background reverberation effect characteristic of that particular room.

Curry explicitly teaches:

reverberation processing is performed to achieve a background reverberation effect characteristic of that particular room ([0040]: performing a reverberation process by means of simulating various virtual room acoustics).

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system, disclosed in Weiss, to include:

reverberation processing is performed to achieve a background reverberation

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effect characteristic of that particular room, for the purpose of providing a schematic of a spatial sound conference bridge used in a spatial sound conference system, as taught in Curry (see [0033]).

Weiss further teaches:

Claim 13. A system according to claim 11, wherein the processing system is further configured to combine the audio streams in adjoining rooms or areas that have an entrance or exit in the virtual environment of the particular room or area where the particular user is located so as to create an adjoining room signal located at the entrance or exit, wherein the adjoining room signal is representative of the combined noise emanating from the room or area adjoining the particular room or area at the entrance or exit (fig. 11: combining the audio streams in adjoining rooms that have an entrance or exit, wherein the adjoining room signal is the combined sound emanating from the room).

Claim 14:

Weiss fails to expressly disclose:

the processing system is further configured to generate for the particular room or area an in-room signal representative of the background due to audio streams emanating from users within the particular room or area and optionally including a weighted reverberant version of any adjoining room signal emanating from users in any room adjoining the particular room or area, wherein said generating includes combining the

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audio streams emanating from users within the particular room or area and optionally a weighted reverberant version of the combined signals emanating from users in the room or rooms or area or areas adjoining the particular room or area.

Curry explicitly teaches:

the processing system is further configured to generate for the particular room or area an in-room signal representative of the background due to audio streams emanating from users within the particular room or area and optionally including a weighted reverberant version of any adjoining room signal emanating from users in any room adjoining the particular room or area, wherein said generating includes combining the audio streams emanating from users within the particular room or area and optionally a weighted reverberant version of the combined signals emanating from users in the room or rooms or area or areas adjoining the particular room or area ([0040]: reverberant version of the combined signals within a room by means of simulating various virtual room acoustics).

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system, disclosed in Weiss, to include:

the processing system is further configured to generate for the particular room or area an in-room signal representative of the background due to audio streams emanating from users within the particular room or area and optionally including a weighted reverberant version of any adjoining room signal emanating from users in any room

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adjoining the particular room or area, wherein said generating includes combining the audio streams emanating from users within the particular room or area and optionally a weighted reverberant version of the combined signals emanating from users in the room or rooms or area or areas adjoining the particular room or area, for the purpose of providing a schematic of a spatial sound conference bridge used in a spatial sound conference system, as taught in Curry (see [0033]).

Claim 15:

Weiss fails to expressly disclose:

the processing system is further configured to generate for the particular room or area a room signal representative of a reverberant version of the adjoining room signal formed as a combining of the signals emanating from users in the room adjoining the particular room or area.

Curry explicitly teaches:

the processing system is further configured to generate for the particular room or area a room signal representative of a reverberant version of the adjoining room signal formed as a combining of the signals emanating from users in the room adjoining the particular room or area ([0040]: reverberant version of the combined signals from an adjoining room by means of simulating various virtual room acoustics).

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Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system, disclosed in Weiss, to include:

the processing system is further configured to generate for the particular room or area a room signal representative of a reverberant version of the adjoining room signal formed as a combining of the signals emanating from users in the room adjoining the particular room or area, for the purpose of providing a schematic of a spatial sound conference bridge used in a spatial sound conference system, as taught in Curry (see [0033]).

Claims 22 and 33.

The subject matter recited in Claims 22 and 33 corresponds to the subject matter recited in Claim 1, except the following limitation which Weiss fails to expressly disclose:

the combined stream is spatialized either before or after transmitting so as to provide a background audio effect within the virtual environment.

Curry explicitly teaches:

the combined stream is spatialized either before or after transmitting so as to provide a background audio effect within the virtual environment ([0035]: creating a spatialized sound signal providing a background audio effect after transmitting).

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Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system, disclosed in Weiss, to include:

the combined stream is spatialized either before or after transmitting so as to provide a background audio effect within the virtual environment, for the purpose of providing a schematic of a spatial sound conference bridge used in a spatial sound conference system, as taught in Curry (see [0033]).

Claim 23. A method according to claim 22, further comprising repeating the determining and the selecting steps to allow for the case that the user status data is altered (col. 7 lines 8-25: updating the user status data).

Claims 24-26:

The subject matter recited in Claims 24-26 corresponds to the subject matter recited in Claims 13-15. Thus Weiss, in view of Curry, discloses every limitation of Claims 24-26, as indicated in the above rejections for Claims 13-15.

Claims 28, 35 and 38:

The subject matter recited in Claims 28, 35 and 38 corresponds to the subject matter recited in Claim 1. Thus Weiss, in view of Curry, discloses every limitation of Claims 28, 35 and 38, as indicated in the above rejections for Claim 1.

Claims 34, 40-41:

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The subject matter recited in Claims 34, 40-41 corresponds to the subject matter recited in Claims 13-15. Thus Weiss, in view of Curry, discloses every limitation of Claims 34, 40-41, as indicated in the above rejections for Claims 13-15.

Claims 29-31, 36-37 & 42, and 43-45:

The subject matter recited in Claims 29-31, 36-37 & 42, and 43-45 corresponds to the subject matter recited in Claims 13-15. Thus Weiss, in view of Curry, discloses every limitation of Claims 29-31, 36-37 & 42, and 43-45, as indicated in the above rejections for Claims 13-15.

Response to Arguments

2. Applicant's arguments against the rejections based on 35 U.S.C. 102 with respect to Claims 1-45 have been considered but are moot in view of the new grounds of rejection.

Conclusion

Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAEHO D. SONG whose telephone number is (571)272-7524. The examiner can normally be reached on Mon-Fri 7:30-5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doug Hutton can be reached on 5712724137. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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*/Daeho D Song/
Examiner, Art Unit 2176*

*/Rachna S Desai/
Primary Examiner, Art Unit 2176*